

ABSTRACT

According to the State of Application Development 2025 report, 74% of organizations will develop ten or more applications next year. Industry demand for scalable and agile applications is growing. Companies are turning to innovative technologies, with Low-Code Development Platforms (LCDPs) like OutSystems leading the way in accelerating application development and empowering non-technical users to participate in the software lifecycle. Automated testing frameworks are crucial for innovative companies seeking to deliver excellent customer service. OutSystems application development using the Behavior-Driven Development (BDD) Framework sometimes faces testing challenges due to the limitations of existing frameworks. This research addresses two key issues, excessive manual effort with human error resulting in inadequate test coverage, and a lack of interface testing capabilities. To address this, since OutSystems follows the MBT approach to unit testing, the authors propose a Model-Based Testing (MBT) framework using Extended Finite State Machines (EFSM). OutSystems action flows are transformed into EFSM models for TestOptimal to build extensive test cases. Selenium integration simplifies end-to-end testing. In our CustomerApp case study, BDD achieved 73.07% coverage and MBT achieved 100% test coverage. This demonstrates that MBT can address all requirements and execution paths, including those not covered in the BDD scenario.

Keywords: *model-based testing, low-code development platform, outsystems, testoptimal, extended finite state machine*